# METHOD AND APPARATUS FOR CONTROLLING --MULTIPLE GAMES WITH ONE OR MORE PROCESSORS

# 5 1. Field of the Invention.

[001] The invention relates to gaming systems and in particular to a method and apparatus for controlling two or more games with a single processor.

### 2. Related Art.

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[002] Worldwide, gaming has gained popularity and acceptance. At many locations that offer gaming, a significant portion of the profits may be generated by gaming or lottery play. Such locations may include numerous locations within casinos, lounges, grocery stores, convenience stores, transportation terminals such as airports, or bus stations. As a result, it may be desired to increase the number of gaming terminals at a location. One proposed solution is to simply increase the number of gaming machines at a location. This prior art solution, however, is not without drawbacks.

[003] One such drawback is that quite often the gaming locations have a limited amount of total floor space or a limited amount of space allocated for gaming machines. Hence, it may not be possible to simply increase the number of gaming machines into the available allocated space because sufficient space may not be available. In addition, gaming machines can be expensive so there is an added expense to the location for every additional gaming machine that is added.

[004] Yet another consideration is that gaming, such as gambling, or other games of chance or skill with a potential to receive money or other award of value, although widely accepted, is still heavily regulated and subject to numerous restrictions. These restrictions cover a wide range of aspects associated with gaming and often limit or restrict the number of gaming machines, based on a CPU count, that a location may have installed and operational. In other jurisdictions, taxes or fees may be levied based on the number of gaming processors that are in use at a particular location. It is also

contemplated that the type of gaming license required for a location may be based on the number of installed processors at a particular location configured to offer gaming. Hence, the prior art solution of simply purchasing and installing additional gaming machines may result in more complex licensing requirements, an increased tax rate, or may not be allowed by the regulations of certain jurisdictions.

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[005] As a result, there is a need in the art for a method and apparatus that overcomes the drawbacks of the prior art while providing a cost effective solution to increase gaming machine play that maintains compliance with jurisdictional regulations.

# SUMMARY

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[006] In one embodiment the method and apparatus disclosed herein comprises a control module 100 configured to concurrently present two or more games to two or more players located at two or more game terminals. In one embodiment each player may select which game to play at a particular terminal thereby allowing each player to play a different game. For example, the shared processor or CPU may present a poker game to a first player at a first game terminal and a slots game to a second player at a second game terminal. Thus, the processor may concurrently execute two separate games, which may be different types or themes of games. The term concurrently is defined to mean at the same time from the player perception. Thus, the processor in the control module may be configured to multi-task between games. The processor may divide its processing resources between two or more games to thereby present what appears to a player to be the simultaneous presentation and control of numerous games. While the games may not be identical in play, speed of execution, or complexity, the control module may offer two or more games to two or more players at two or more game terminals.

[007] The various embodiments shown herein have the advantage of utilizing a single processor or control module to control two or more game terminals. This results in a cost saving on a per game terminal basis or on a per game basis because certain devices, such as the processor and memory can be shared and configured to control multiple games. This sharing reduces the cost on a per game basis. Since the cost of the processor, memory, and other related control devices may be a significant portion of the total cost of a prior art gaming machine, such shared processing may significantly reduce the cost on a per game basis. In addition, having fewer control modules and processors also reduces the cost of repair, upgrade, and maintenance, power consumption, and heat generation.

25 [008] Another advantage of the method and apparatus described herein is that the space required to offer a game or wagering event to a player is reduced because certain space consuming components, such as those within the control module, are shared. In addition, such shared components may be located remote from the game terminals, such as for

example in an area where more space is available. It is also contemplated that flat panel displays may be used in conjunction with the game terminals to further reduce the amount of space consumed by a game terminal.

[009] Yet another advantage is that due to numerous game terminals and games being enabled by a single processor, numerous jurisdictional rules and regulations may be more easily complied with and in certain jurisdictions it may be possible to increase a game operator's number of game terminals without increasing the licensing requirements, or taxes or fees, which may be paid on a per processor basis.

[010] In one embodiment a system is disclosed for offering a wagering event to a player comprising a first game terminal having the following elements. A display is configured to display wagering event information to a first player. A player interface is configured to receive input from the first player and a monetary interface or card interface configured to accept a wager from the first player. A second game terminal is configured generally similar to the first terminal. A processor is configured to access the memory to execute the machine readable game code to concurrently offer a game to the first player at the first game terminal and a second player at a second game terminal.

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[011] In one embodiment the display comprises a flat panel touch screen display. The flat panel touch screen may be configured as a player interface. In one embodiment the memory and processor are remote from the first game terminal and the second game terminal. It is contemplated that the processor may be part of a control module that communicates with the first game terminal and the second game terminal via a network connection. Alternatively, the processor may be part of a control module and the control module may communicate with the first game terminal and the second game terminal utilizing a universal serial bus connection.

25 [012] In one embodiment a gaming system is configured to simultaneously offer a first wagering event to a first player and a second wagering event to a second player. This embodiment may comprise a control module having a processor configured to execute software code such that the software code is configured to generate the first and second

wagering events. Also part of this embodiment are two or more game terminals configured to concurrently present the first wagering event to a first player and the second wagering event to a second player, the two or more game terminals configured to communicate with the control module through at least one communication interface. The at least one communication interface may connect to the control module. The at least one communication interface may be configured to send data to and receive data from a first game terminal and a second game terminal to thereby concurrently provide the first wagering event to a first player and a second wagering event to a second player.

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[013] In one embodiment of this system the communication interface comprises a network interface card. In addition, at least one of the game terminals may comprise a display configured to present a wagering event to a player, a player interface configured to receive input from a player in response to the wagering event, and a wager acceptor consisting of a wager acceptor selected from the group consisting of a coin acceptor, bill acceptor, and card reader. In one embodiment the control module and at least one of the game terminals communicate using an Ethernet communication protocol. In one embodiment the game terminals are configured as and operate as remotely located player interfaces without use of a network communication protocol. It is contemplated that the two or more game terminals comprise a first game terminal and a second game terminal and the first game terminal is contained within the same housing as the second game terminal.

[014] Also disclosed is a method for utilizing a processor to control two or more game terminals and present two or more games to two or more players. In one embodiment this comprises providing a control module having a processor configured to read and execute game code stored on a memory and executing the game code to generate a first wagering event and executing the game code to generate a second wagering event. The method also comprises sending the first wagering event to a first game terminal for presentation to a first player and sending the second wagering event to a second game terminal for presentation to a second player. The method may receive, at the control

module, input from the first player at the first game terminal in response to the first wagering event and receive, at the control module, player input from the second game terminal in response to the second wagering event to wherein the first player may be participating in the first wagering event and the second player may be participating in the second wagering event at the same time.

[015] This method may further comprise receiving network input from a control module network to which the control module is connected via a network interface card. It is contemplated that the processor may multi-task between the first wagering event and the second wagering event to thereby present the first wagering event and the second wagering event at the same time. In one embodiment the control module comprises a personal computer and each game terminal comprises a display and a player interface. In this method sending may comprise sending video signals and audio signals.

[016] Other systems, methods, features and advantages of the invention will be or will become apparent to one with skill in the art upon examination of the following figures and detailed description. It is intended that all such additional systems, methods, features and advantages be included within this description, be within the scope of the invention, and be protected by the accompanying claims.

### **BRIEF DESCRIPTION OF THE DRAWINGS**

20 [017] Figure 1 illustrates an external view of a game terminal.

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- [018] Figure 2 illustrates an internal view of a game terminal.
- [019] Figure 3 illustrates a block diagram of an example embodiment of a CPU or processor configured to control two or more game terminals.
- [020] Figure 4 illustrates a block diagram of an example embodiment of a CPU or processor configured to control two or more remote game terminals.

#### **DETAILED DESCRIPTION**

[021] In one or more embodiments, the invention comprises two or more game terminals controlled by one or more processors or CPUs. In one embodiment the signal processor controls two or more game terminals and multi-tasks to provide a wagering event to two or more players. In the following description, numerous specific details are set forth in order to provide a more thorough description of the present invention. It will be apparent, however, to one skilled in the art, that the present invention may be practiced without these specific details. In other instances, well-known features have not been described in detail so as not to obscure the invention.

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[022] In general, the present invention comprises a control module, processor, or CPU configured to control two or more game terminals. The game terminals may be associated with a network, whereby data may be transmitted to a location remote from the control module. One or more methods comprise controlling the activity of two or more game terminals with a single control module.

[023] Referring to Figure 1, there is illustrated one embodiment of a game terminal 20 in accordance with the present invention. In general, the game terminal 20 is adapted to present at least one game for play to a player. Although a single game terminal is shown, it is understood that two or more such terminals may be presented and controlled by a single control module. The term game is defined to mean any type game of chance resulting in an award or played for monetary payout, such as but not limited to a wagering event, gaming or gambling opportunity, lottery, poker, slots, keno or any other type of game, wagering event, or the like. As illustrated, the game terminal 20 includes a housing 22 which supports and/or houses the various components of the game terminal 20. In the embodiment illustrated, the game terminal 20 is adapted to present a game of video poker and includes a display 24 for displaying images of cards and other information. A variety of buttons are provided by which a player may provide input, such as an instruction to deal cards, hold cards, place bets and cash out.

[024]—In one or more embodiments of the invention, the game terminal 20, inconjunction with a control module, is adapted to present a wager-type game. In this arrangement, a player is required to place a bet or wager in order to participate in the game. In the event the outcome of the game is a winning outcome, then the player may be provided with an award. In one arrangement, the award may be winnings based upon the amount wagered or bet by the player.

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[025] In order to accept a wager, the game terminal 20 may include a coin acceptor 26 for accepting coins. The game terminal 20 may also include a bill acceptor or validator 28 for accepting paper currency. The game terminal 20 may be provided with other means for accepting or verifying value, such as a credit card reader.

[026] In this well known game, a player may be awarded a prize or payout if the outcome of the card hand is a predetermined combination of cards. In one embodiment, the award may be paid in coins, such as to a coin tray 30. In other embodiments, the award may be paid as a ticket, credit or the like. It is contemplated that the associated hardware required achieving such payouts maybe located in the game terminal 20.

[027] It should be understood that the game terminal 20 may be adapted to present one or more of a wide variety of games. Depending upon the game presented, the configuration of the machine may vary. For example, in the event the game terminal 20 is adapted to present the game of slots, then the game terminal 20 may include a plurality of spinning reels or an electronic display of reels.

[028] As used herein, the term game terminal is not limited to a machine such as that just described and illustrated in Figure 1. For example, the principles of the invention may be applied to a wide variety of devices or systems which are adapted to present one or more games or offering of a lottery event. Such devices include personal computing devices, whether of the desktop, notebook, handheld or other varieties, which devices are arranged to implement a game. Other devices may be specially configured to present one or more games, but be other than as configured above. Other devices may include game terminals or interfaces located in a wide variety of locations, whether custom configured

or having a more general applicability. For example, the device may comprise a game-terminal which is located in a hotel room, and as such, two or more terminals may be provided, which are controlled by a single CPU, or a single CPU may control game terminals that are in adjacent or closely located rooms. Likewise, two or more game terminals may be physically located in the same area, but contained within a single cabinet.

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[029] In one embodiment of the invention, the game terminal 20 has a security or monitoring system/feature including at least one security data collection device. The image collection device may comprise a variety of types of devices. In one embodiment, the image collection device comprises a camera 32. The camera 32 may comprise a CCD or CMOS type image collection device. In one or more embodiments, the game terminal 20 preferably includes a security data collection/monitoring device comprising an audio collection device. Referring to Figure 1, in one embodiment, the audio collection device comprises a microphone 33.

[030] Referring to Figure 2, in one or more embodiments, the game terminal 20 includes an interior 36 in which are located a plurality of devices. As illustrated, the game terminal housing 22 includes a door 38 moveable between open and closed positions for selectively accessing the interior 36. Figure 2 illustrates the door 38 in an open position, whereby access to the interior 36 is permitted. Figure 1 illustrates the game terminal 20 with the door 38 in a closed position. In the embodiment illustrated, the door 38 is mounted to a main portion of the housing 22 with one or more hinges. This is but one possible configuration for a game terminal 20. It is contemplated that with new designs and technology new configurations which reduce space may be designed, such as wall mounted versions that utilize a flat panel display.

25 [031] Referring still to Figure 2, a variety of equipment for implementing a game is housed within the interior 36. As illustrated, the display 24 is mounted for alignment with a port in the door 38 for viewing by a player. A light 34 is provided for backlighting game terminal glass 42 located in an upper portion of the door 38. A game terminal

components/devices of the game terminal 20, as is well known and which may interface with a control module as shown in Figure 3. A bill or cash box 46 is provided for housing currency, such as paper bills or tickets, accepted by the game terminal 20 through the bill validator 28. A coin hopper or box 48 is provided for housing coins which are accepted through the coin acceptor 26 and from which coins may be dispensed to the coin tray 30 as winnings. As illustrated in one embodiment, two "interior" cameras 50a 50b are provided. As with the exterior camera(s) 32, the number, location and type of interior cameras 50a 50b may vary. Because the details of all of these various other devices associated with the game terminal including their arrangements, configurations and workings are known to those of skill in the art, these devices are not described in great detail herein.

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[032] In a preferred embodiment, one or more lights 54 are provided for illuminating areas of the game terminal 20. Other means for lighting the desired areas may be provided, including use of flashers. In one embodiment, the lights 54, 42 or other means of illumination, may be activated only when a winning event occurs.

[033] In one or more embodiments of the invention, means are provided for controlling the game terminal 20 in conjunction with the control module. The game terminal 20 includes a game terminal interface 44 configured to interface with a control module, as is described in Figure 3, and controls the one or more devices described herein that are associated with the game terminal. The game terminal interface 44 may have a variety of forms. In one embodiment, the interface 44 includes a data processing device or "processor" 58. The processor 58 or logic may be of a variety of types, including one or many readily commercially available such as those manufactured by AMD, Sun Microsystems and Intel. It is contemplated that the game terminal interface 44 may be a low cost device as it is not configured to execute the actual software game code, but instead controls the interface between a control module and the game terminal 20. In another embodiment the interface 44 comprises logic, or a network interface. It is

contemplated that the control module, as described below, and any software codeexecuting thereon may be configured to multi-task to provide two or more wagering events at the same time or concurrently to two or more game terminals 20 through communication with the interface 44 within the game terminal. It is understood that the terms multi-task, concurrently, or at the same time take into account the understood operation of a processor executing software code that quickly switches between tasks to present an uninterrupted wagering event.

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[034] In one embodiment, the interface 44 includes a memory 60 or other information storage device for storing data. The memory 60 may be of a variety of types, such as RAM, SDRAM, DRAM, EEPROM and Flash RAM, optical memory, or hard disk drive. In addition, the game terminal 20 may be associated with a player tracking or reward system network for monitoring play data from a remote location. In one embodiment the player tracking device is a "stand-alone" or "add-on" type device which may be used with a variety of game terminals. As such, the player tracking device may include a housing for supporting one or more elements. As illustrated, the housing is adapted to fit into a slot or opening in the housing of the game terminal 20 and be mounted to the housing or other support structure of the game terminal. In one embodiment, the player tracking device includes a card reader. The card reader may comprise a magnetic stripe or other type of reading and writing device.

[035] Figure 3 illustrates a block diagram of an example embodiment of a processor configured to control two game terminals. Figure 3 illustrates but one possible example embodiment and, as such, it is contemplated that those of ordinary skill in the art may configure different embodiments that do not depart from the scope of the claims that follow. In this example embodiment a control module 60 is in communication with a first game terminal 62 and a second game terminal 64. In this example embodiment the game terminals 62, 64 are shown adjacent or in close proximity to the control module 60, such as in the same cabinet or housing.

[036] The control module 60 comprises a CPU-66 that is configured to control-the-game-offered on the first game terminal 62 and the second game terminal 64. The CPU 66 communicates with a memory 68. In this embodiment the memory 68 is configured to store machine readable code that is written to present a game to the first game terminal 62 and the second game terminal 64. In one embodiment the machine readable code is written in C++ programming language. In one embodiment the code is written with a single class for each function required for each player. The memory 68 may comprise a RAM, ROM, optically readable media, flash, or any other type of memory. In one or more embodiments, the memory 68 may comprise a mass storage device such as a hard drive, CD-RW, DVD-RAM, or the like for storing larger quantities of data. A media reader 70 is also in communication with the processor 66 and may serve as means to load data to the memory or recover data from the memory or CPU.

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[037] A first video adapter 72 and a second video adapter 74 connect to the CPU or are configured to receive data or instructions from the CPU. The video adapters 72, 74 may comprise any type device configured to provide video signals to a display. The video signal may comprise a digital or analog signal. In one embodiment the video adapters 72, 74 comprise video display adapters as found in personal computers or other consumer devices. The output of the video adapters 72, 74 connect to a display 78A, 78B configured to visually present the game to one or more players. The display may comprise any type display including any type flat panel display, CRT display, and may be configured with touch screen capabilities. As such, the displays 78A, 78B also interface with a terminal interface 80A, 80B, which is discussed below in greater detail.

[038] Also part of the control module 60 is one or more audio interfaces 84 that are configured to receive control instructions from the CPU 66 and generate audio signals for use by one or more speakers 86A, 86B that may be configured as part of the game terminals 62, 64. Any type speaker may be selected as would be understood by one of skill in the art. In one embodiment the audio interface 84 is distributed in each game terminal 62, 64. In one embodiment the cost of each game terminal is reduced by having

the audio generation capability consolidated in the control module 60 as shown. In one embodiment an audio interface is configured so that the right channel is configured for use by the first game terminal 62 and a left channel is configured for use by the second game terminal 64. In such a configuration an audio generation card as found in personal computers may be used.

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[039] The CPU also connects to the terminal interfaces 80A, 80B as found in the game terminals 62, 64. In one embodiment the terminal interface 80A, 80B comprise a switching mechanism configured to selectively switch, address, or route control or data signals from the CPU 66 to the components of the respective game terminals. In one embodiment the terminal interfaces 80A, 80B process the signals received from the CPU to perform an interface or buffer function between the CPU 66 and the individual components of the game terminals 62, 64. In one embodiment the terminal interfaces 80A, 80B comprise a low cost processor.

[040] A player interface 94A, 94B connects to the game terminal interface 80A, 80B to receive or provide input from a player. The player interface 94A, 94B may comprise buttons, touch screen interface, dials, or any other type of system configured to provide or receive information from or to a player.

[041] Connecting to the terminal interface 80A, 80B, is a camera, door monitor, sensor or other security device 88A, 88B. The security device 88A, 88B is configured to prevent and alert tampering or unauthorized access to the game terminal 62, 64. In one embodiment one or more game terminals 62, 64 further comprises one or more iris recognition cameras that may be connected to separate serial or parallel channels for biometric input from a player. Likewise, other input devices may be included such as but not limited to voice recognition or fingerprint recognition systems.

25 [042] It is further contemplated that one or more monetary interface and/or card interfaces 90A, 90B resided in the game terminal 62, 64 and is configured to accept or return money or other items of monetary worth to a player. Likewise, the one or more monetary interface and/or card interfaces 90A, 90B may comprise systems configured to

card readers may be provided for reading player data or player tracking cards. As these systems are known in the art, they are not described here in detail.

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[043] In addition, it is contemplated that connections shown between the devices in the game terminals 62, 64, the connections within the control module 60, and the connections between the control module and the game terminals, may comprise serial or single conductor connections, such as to facilitate serial interface, or may comprise parallel or multi-conductor connections, such as to facilitate parallel communication. In one embodiment one or more of the connections between devices operate in accordance with the standard communication (COMM) standard for communication. In one embodiment one or more of the connections between devices operate in accordance with the USB standard for communication or any other communication standard as may be contemplated by one of ordinary skill in the art. It is also contemplated that communication between the terminals 62, 64 and the control module 60 may comprise wireless communication.

[044] Figure 4 illustrates a block diagram of an example embodiment of a processor configured to control two or more terminals that are located remote from the processor or control module. In this example embodiment N number of game terminals 102 may be controlled by a control module 100. In one configuration the control module 100 is located remote from the game terminals, such as in a secure location and is configured to control two or more game terminals 102 as shown.

[045] In the example embodiment shown in Figure 4, the control module 100 is configured to communicate with N number of remote game terminals 102A, 102B, 102N where N is any positive integer number. The remote game terminals may be at different locations or located in close proximity within an establishment or venue. In this example embodiment at least one remote game terminal 102 comprises or contains a network interface card 104A, 104B, 104N that may be configured to communicate over a communication channel with the control module 100. The channel may comprise a wired

or wireless channel. In other embodiments a network communication protocol is notutilized but instead video or audio signals are directly sent to systems of the game terminal 102. The protocol/architecture of the communications link, including interfaces associated with the interface, logic, or controller 44 and control station 66 may be of a variety of types. For example, if the link is a wireless link, the protocol/architecture may be Bluetooth or IEEE 802.11. For wired links, the protocol/architecture may be RS-232, IEEE-1394 (Firewire®), Ethernet, or TCP/IP. As noted above, the link may be associated with or provided through another network, such as a player tracking network. The game terminals 102 may be configured as shown in Figure 3.

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[046] The control module 100 comprises a CPU 112 or processor in communication with a media reader 114 and a memory 116. The terms CPU and processor are used interchangeably herein. The media reader 116 and the memory 114 may be configured as described above to facilitate game play by a player associated with a game terminal 102.

[047] A NIC 120 may also be part of the control module 100, such as if the control module is part of a larger or separate control module network (not shown). The NIC 120 may operate in accordance with any known or future developed communication or networking protocol.

[048] To achieve communication with the remote game terminals 102 the CPU may communicate individually or as shown via a common bus 122 with the one or more video adapters 130A, 130B, 130N and the one or more audio interfaces 134A, 134B, 134N. In turn, the one or more video adapters 130A, 130B, 130N and the one or more audio interfaces 134A, 134B, 134N may communicate directly with the remote game terminals 102 or as shown via network interface cards 138A, 138B, 138N. The video adapters 130A, 130B, 130N, the audio interface 134A, 134B, 134N and NICs 138A, 138B, 138N may comprise any type of devices as described above or to function as described herein. In addition and as describe above, the connection shown in Figure 4 may comprise single or multiple conductor connections to achieve communication in a serial or parallel manner. In addition, communication may occur over a wireless link as described above.

[049] It is further contemplated that the control module 100 as described herein may be configured to concurrently present two or more games to the two or more players, and each game in play may comprise a different type of game. Hence, each player may select which game to play at a particular terminal thereby allowing each player to play a different game. For example, the processor or CPU may present a poker game to a first player at a first game terminal and slots game to a second player at a second game terminal. Thus the processor may concurrently execute two separate games, which may be different types or themes of games. The term concurrently is defined to mean at the same time from the player perception. Thus, the processor 112 in the control module 100 may be configured to multi-task between games. The processor may divide its processing resources between the two or more games to thereby present what appears to a player to be the simultaneous presentation and control of numerous games. While the games may not be identical in play, speed of execution, or complexity, the control module may offer two or more games to two or more players at two or more game terminals.

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[050] The various embodiments shown herein have the advantage of utilizing a single processor or control module to control two or more game terminals. This results in a cost saving on a per game terminal basis or on a per game basis because certain devices, such as the processor and memory 114, 68, can be shared and configured to control multiple games. This sharing reduces the cost on a per game basis. Since the cost of the processor, memory, and other related control devices may be a significant portion of the total cost of a prior art gaming machine, such shared processing may significantly reduce the cost on a per game basis. In addition, having fewer control modules and processors also reduces the cost of repair, upgrade, and maintenance, power consumption, and heat generation.

[051] Another advantage of the method and apparatus described herein is that the space required to offer a game or wagering event to a player is reduced because certain space consuming components, such as those within the control module, are shared. In addition,

such shared components may be located remote from the game terminals, such as for example in an area where more space is available. It is also contemplated that flat panel displays may be used in conjunction with the game terminals to further reduce the amount of space consumed by a game terminal.

- 5 [052] Yet another advantage is that due to numerous game terminals and games being enabled by a single processor, numerous jurisdictional rules and regulations may be more easily complied with and in certain jurisdictions it may be possible to increase a game operators number of game terminals without increasing the licensing requirements, or taxes or fees, which may be paid on a per processor basis.
- 10 [053] While various embodiments of the invention have been described, it will be apparent to those of ordinary skill in the art that many more embodiments and implementations are possible that are within the scope of this invention.